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SOURCE Elektrichestvo, No 2, 1950.THE POWER ECONOMY OF CZECHOSLOVAKIA

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Power Resources and Their Utilization

The main power resources of Czechoslovakia are coal and water power. Coal is used to obtain power both directly and by preliminary gasification. Black-coal reserves are estimated to be 6.5 billion tons, 6.1 billion of which are in the Ostrava-Karvina Basin. (1) Brown-coal reserves are put at over 12 billion tons, 11.5 billion tons being in the North Bohemian Basin.

The output coal, and also the production of gas from coal, is shown in Table 1. (2, 3)

Table 1

Annual Output

	Black Coal (1,000 tons)	Brown Coal (1,000 tons)	Gas (million cu m)
1929	16,522	22,561	---
1935	10,895	15,114	---
1936	12,233	15,949	---
1937	16,778	17,895	136.3
1945	11,716	15,356	174.9
1946	14,168	19,459	232.5
1948	17,746	23,589	611.5

Very little use has yet been made of water power resources. The total electric power produced by hydro stations in 1946 was 583,700,000 kilowatt-hours, or 8.75 percent of the total produced in the country. Extensive building of hydroelectric power stations began in 1947. (4) Over 16 hydroelectric power stations are in progress or have already been completed. (5)

- 1 - **CONFIDENTIAL**

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Production of Electric Power

Table 2 shows the production of electric power for the country as a whole, according to types of stations and per person for several years. (2,4,6,14)

Table 2

<u>Electric Power Generated</u>	<u>1937</u>	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1950 (plan)</u>
Total (million kw-h)	4,115	5,622	6,663	7,515	8,880
By general purpose stations (million kw-h)	1,534	2,378	2,753	--	--
By industrial stations (million kw-h)	2,581	3,244	3,910	--	--
By hydro stations (million kw-h)	--	584	446	--	--
Per person (kw-h)	285	432	542	616	--

During the first 20 years of the Czechoslovak Republic (1918-1938), the power of its electric stations was tripled, and the production of electric power was almost tripled, reaching over 4 billion kilowatt-hours. Six years of German occupation had an adverse effect on the tempo of electric power production. During the past 4 years, the production of electric power in Czechoslovakia has again been increasing at a rapid rate. It has increased by 88.5 percent, as compared with 1937, and is five times as much as it was in 1918. Thus, the increase in the production of electric power during the past 4 years (about 3.3 billion kilowatt-hours) exceeded the increase in production after 20 years of bourgeois stewardship. The further increase of electric power production provided for in the Five-Year Plan for the Development of the Czechoslovak Republic is also proceeding in accelerated tempo. According to the plan, the 1953 production of electric power will be 11,200,000,000 kilowatt-hours, the increase during the plan being approximately 3.7 billion kilowatt-hours.

On 1 January 1949 the power industry (the production of electric power and gas) included 1,180 enterprises and a labor force of 43,391 persons. (7) The distribution of these enterprises according to ownership is shown below:

	<u>No of Enterprises</u>	<u>Labor Force</u>
State-owned enterprises	1,151	43,283
Cooperative enterprises	8	62
Total socialist enterprises	1,159	43,345
Private capital enterprises	8	33
Small privately owned enterprises	13	13
Total	1,180	43,391

On 1 December 1945 there were 1,643 electric power stations in the country, including industrial stations. (8) In 1947 there were 992 electric power stations in operation in the Czech Provinces alone (Bohemia, Moravia, Silesia), 720 of these being industrial stations. (9) Most of these stations are steam operated, working on coal.

- 2 -

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At the beginning of 1946, work was started on plans for enlarging and rebuilding a number of stations -- Stechovice, Ervenice, Oslavany, Kolin, Porici, Trebovice -- and also for building new stations in Slovakia. In 1946 a start was made on enlarging the stations of the Ervenice Power Combine (North Bohemia region), as follows:

Ervenice - Power after enlargement 140,000 kilowatts. (8)

Komorany - 220,000 kilowatts.

This combine will satisfy all the power requirement of the North Bohemia industrial region.

Czechoslovakia has high-voltage interconnecting ties with Poland, Hungary, and Austria and, consequently, can import and export electric power. In 1946, 102 million kilowatt-hours were imported and 3 million kilowatt-hours exported. In 1947 the corresponding figures were 116,600,000 and 2,700,000. (4)

The technical and economic indexes of operation of electric power stations in Czechoslovakia are still not high enough and show that there are considerable reserves. Table 3 shows the technical and economic indexes for all the general purpose steam electric power stations in Czechoslovakia and for the industrial steam electric power stations of the Czech Provinces (arranged according to specific fuel consumption). (10)

Table 3.

Mean Specific Fuel Consumption		No of Electric Power Stations	Proportionate Importance of Given Group of Stations as Regards		Utilization of Rated Power (hr)	Mean Rated Power (kw)
Cals per Kw-h Generated	Grams of Ideal fuel per Kw-h		Rated Power (%)	Power Generated (%)		
a. General Purpose Stations						
3,304	472	2	8.6	9.01	3,330	30,975
4,527	646	8	42.35	44.38	3,610	38,200
5,483	783	6	12.47	10.57	2,700	15,000
6,309	901	10	31.96	33.78	3,355	23,037
7,235	1,033	5	2.89	1.76	1,930	4,176
8,245	1,179	2	0.68	0.24	1,150	2,441
10,608	1,516	3	0.21	0.05	732	507
12,600	1,800	1	0.19	0.07	1,200	1,376
13,520	1,932	3	0.23	0.09	1,195	561
14,168	2,024	1	0.08	0.02	675	550
18,190	2,600	7	0.34	0.03	1,830	354

- 3 -

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50X1-HUM

(Table 3 Continued)

Mean Specific Fuel Consumption	No of Electric Power Stations	Proportionate Importance of Given Group of Stations as Regards	Rated Power (%)	Power Generated (%)	Utilization of Rated Power (hr)	Mean Rated Power (kw)
Cals per Kw-h Generated	Grams of Ideal fuel per Kw-h					

Average

5,199	743	48	100.00	100.00	3,160	15,150
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## b. Industrial Stations

3,590	513	51	22.51	30.32	3,600	5,625
4,250	607	44	4.43	4.19	2,410	1,300
5,870	839	56	9.30	4.97	1,370	2,140
6,120	875	178	51.89	55.84	2,770	3,720
8,430	1,204	192	10.20	3.57	910	715
10,580	1,512	63	1.62	0.95	1,470	356
14,900	2,178	5	0.08	0.16	725	217

Average

5,483	784	589	100.00	100.00	2,580	2,190
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Power Machine Building and the Electrical Industry

At present, the Czechoslovak electrical engineering industry has 37 combines (people's enterprises, according to the terminology adopted in Czechoslovakia) with a labor force of 51,000 (11). The 14 largest combines include 194 plants. The most important products are shown in Table 4. (3, 6, 12, 13). In addition, in 1947 plants of the electrical engineering industry produced streetcars and trolley buses.

Table 4

	1937	1946	1947	1948	1953 (plan)
Electric motors, 0.5 to 25 kw (thousands)	81.6	--	222.1	276.2	890
Electric motors, up to 0.5 kw (thousands)	--	--	--	171.8	--
Radio receivers (thousands)	282.8	104.5	162.8	267.7	300
Telephones (thousands)	32.7	40.3	72.8	84.2	150
Electric lamps (millions)	6.09	8.13	12.46	14.01	--
Radio tubes (thousands)	--	--	1,652.4	2,388.8	--

- 4 -

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By the end of 1948, the electrical engineering industry considerably exceeded the prewar production level, as is shown by the data in Table 5 (in percent). (11)

Table 5.

	<u>1937</u>	<u>1946</u>	<u>1948</u>
Gross output	100	104	240
No of workers	100	136	167
Output per worker	100	76	144

The first Two-Year State Plan for the Restoration and Development of the National Economy for 1947 - 1948 was fulfilled as follows for the most important types of production of the electrical engineering industry (in percent):

Electric motors up to 0.5 kilowatt	95.0
Electric motors from 0.5 to 25 kilowatts	106.0
Radio receivers	128.1
Telephone equipment	110.2
Electric lamps	92.9
Radio tubes	104.0
Electrical equipment for aircraft and automobiles	105.0

In 1948, 35 percent of all electric motors produced were turned over directly for equipment installation in capital construction; 44 percent went to combines of the metal industry, 15 percent to agriculture, and 6 percent to industrial and trading enterprises.

The tasks confronting the electrical machine building industry in the first Five-Year Plan are causing the emphasis to shift to heavy equipment (turbines, generators, etc.).

Organizationally, electrical machine building in Czechoslovakia is divided into three groups.

Group 1: Capital Equipment (heavy electrical machine building, light electrical, machine building, measuring apparatus, cables and conductors, communications and electrotherapeutic equipment).

Group 2: Mixed Equipment (installation materials and lamps, storage and dry batteries, electrical equipment of aircraft and automobiles).

Group 3: Consumers' Goods (electric lamps, radio tubes, domestic appliances, and radio receivers).

By the end of the first Five-Year Plan, in comparison to 1948, heavy electrical machine building production will have increased 3.25 times, light electrical machine building 1.93 times, communications equipment 3.25 times, cables and conductors 1.6 times, installation materials and lamps 2.38 times, and other branches about 1.56 times. The average for the industry as a whole is 2.05 times.

- 5 -

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50X1-HUM

The value of production will in 1953 attain 492 percent of the 1937 level. The labor force of the electrical engineering industry will have increased by 253 percent, as compared with 1937. Productivity of labor will have increased by 195 percent as against 1937, and by 135.5 percent, as against 1948. The gross production of the industry will amount to 18.3 billion crowns in terms of 1948 prices.

In order to give some idea of the assimilation and introduction of new techniques, mention may be made of the following achievements of the Czechoslovak electrical machine building industry.

The Tesla Plant in Hloubetin has manufactured the prototype of a new machine, the "Traformat," which automatically assembles the internal parts of transformers. It can perform 60 man-hours of work in 10 seconds, and processes 4.5 tons of iron in one working day. The Skoda Electrical Engineering Plant in Pilsen has produced a new type of high-voltage breaker, the VV100/600, for APV (automatic repeated reclosing). Series production is in progress. The breaker is designed for use with 100-kilovolt networks and is operated by compressed air at 20 atmospheres.

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- E N D -

- 6 -

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